Paints containing two pigments :—

No.	Page.	Constituents.	Per cent.	State.
1.	28	White lead	34·0	
		Zinc oxide	66·0	Good.
2.	28	White lead	50·4	
		Zinc oxide	49·6	Good.
6.	28	Zinc oxide	62·9	
		Barytes	37·1	Fair.
7.	29	White lead	45·0	
		Zinc oxide	55·0	Good.
11.	29	White lead	49·0	
		Zinc oxide	51·0	Good.
18.	30	White lead	79·10	
		Zinc oxide	20·90	Good.
19.	30	Basic lead sulphate	65·9	
		Zinc oxide	34·1	Good.
46.	34	Zinc oxide	62·75	
		Barium sulphate	37·25	Fair.

Note.—There is a discrepancy between the constituents given on pages 33 and 61 as representative of mixture 45. This was therefore excluded from consideration.

Paints containing three pigments :—

No.	Page.	Constituents.	Per cent.	State.
4.	28	White lead	48·5	
		Zinc oxide	48·3	
		Calcium carbonate	3·2	Good.
8.*	53	White lead	38·0	
		Zinc oxide	48·0	
		Silica	14·0	Good.
9.	29	Zinc oxide	74·5	
		Silica	22·4	
		Calcium carbonate	3·1	Fair.
12.	29	White lead	61·1	
		Zinc oxide	34·1	
		Inert pigment	4·8	Good.
16.	30	White lead	34·23	
		Zinc oxide	34·77	
		Barium sulphate	31·10	Fair.

* *Note.*—Omitted from the condensed table beginning on page 28.

Paints containing four pigments :—

No.	Page.	Constituents.	Per cent.	State.
3.	28	Sublimed white lead	29·56	
		White lead	16·04	
		Calcium carbonate	9·74	
		Zinc oxide	44·66	Good.
10.	29	White lead	43·2	
		Zinc oxide	43·4	
		Calcium carbonate	7·4	
		Magnesium silicate	6·0	Good.
13.	30	Basic lead sulphate	57·04	
		Zinc oxide	30·74	
		Magnesium silicate	8·26	
		Calcium carbonate	3·96	Good.
15.*	67	Zinc lead white..	30·0	
		Zinc oxide	40·0	
		White lead	20·0	
		Calcium carbonate	*10*	*Good.*
17.	30	White lead	36·72	
		Zinc oxide	42·84	
		Barium sulphate	17·18	
		Asbestine	3·26	Good.
20.	31	White lead	66·3	
		Zinc oxide	19·2	
		Asbestine	4·7	
		Calcium carbonate.	9·8	Good.
33.	32	Zinc oxide	32·04	
		Silica	29·77	
		White lead	17·29	
		Basic lead sulphate	20·00	Not described.

* Omitted from the condensed table beginning on page 28.

Paints containing five pigments :—

No.	Page.	Constituents.	Per cent.	State.
5.	28	White lead	41·4	
		Zinc oxide	49·3	
		Calcium carbonate	3·5	
		Magnesium carbonate	1.4	
		Aluminium and magnesium silicates	24·4	Good.
14.	30	Magnesium carbonate	·89	
		Calcium carbonate	2·86	
		Sublimed white lead	15·96	
		Zinc oxide	26·79	
		White lead	25·55	
		Calcium sulphate ; hydrated..	27·95	Bad.

Paints containing six pigments :—

No.	Page.	Constituents.	Per cent.	State.
34.	32	White lead	35·9	
		Lead sulphate	7·3	
		Zinc oxide	35·7	
		Calcium carbonate	18·3	
		Barytes and silica	2·8	Good.
35.	33	Lead sulphate	4·43	
		White lead	38·14	
		Zinc oxide	27·14	
		Calcium carbonate	20·26	
		Barytes and silica	10·03	Good.

Obituary.

OSCAR GUTTMANN.

Oscar Guttmann was born February 24th, 1855, at Nagy-Becskerek, in Hungary. At the comparatively early age of 23 years he already showed remarkable capability for literary work of a technical kind, for in the year 1878 he took over the editorship of "Der Bergmann," a technical journal devoted to mining, metallurgy, and engineering, and in connection therewith also edited the Austro-Hungarian Berg- und Hüttenkalender till 1888. In 1878, Guttmann obtained an appointment in the St. Lambrecht Dynamite Works in Austria, where dynamite was produced by mixing nitroglycerin with wood meal. In 1881 he was called upon to erect a guncotton factory at Buda-Pest, and three years later the Nobel Dynamite Company entrusted him with the management of the Isleten Dynamite Works, where the blasting material for the construction of the St. Gothard Tunnel was manufactured. In 1886, he was commissioned to reconstruct the Dynamite Works of Avigliana, in Italy.

Three years before, Guttmann had undertaken a journey of instruction and investigation to England, and aided by influential introductions he was permitted to visit a large number of Explosives Works in this country. The impressions of this journey have been laid down in a special report published in Dingler's Polyt. Journal. No doubt, he must have returned favourably impressed with the opportunities this country offered, for in 1887 he settled down in London as a consulting engineer and chemical adviser, especially for the manufacture of explosives, and for the subsidiary industries such as the manufacture of nitric acid, sulphuric acid, etc.

One of his first important undertakings in this country was the erection of the National Explosives Works at Hayle, in Cornwall, which he subsequently managed for several years. Later on he erected acetone plants at Waltham Abbey, Woolwich, Clapton, and Manchester. Special mention must also be made of the fact that he was commissioned to erect the testing station for explosives in Reichenstein, Germany.

He took out patents for his well-known apparatus for the manufacture of nitric acid, for a method for the concentration of sulphuric acid; and for the construction of condensing towers (Guttmann's Reaction Tower) filled with stoneware balls of various forms. As a logical outcome thereof there followed several other patents, having for their object the acceleration of the reaction of gases and liquids by means of contact substances and "Improvements in Heat Exchanging Apparatus."

In the year 1892 Guttmann published "Blasting," a handbook for the use of engineers, a second edition of which appeared in 1906. The same work was published in German under the title, "Handbuch der Sprengarbeit." In this work he described his apparatus for measuring the relative force exerted by different explosives on explosion. In 1895 appeared his "magnum opus," "The Manufacture of Explosives" in two volumes, the same work being also published in German. Thus Guttmann came to be recognised as one of the foremost authorities on all matters connected with explosives, and it is therefore not to be wondered at that he was asked in 1900 to write the article:—"Schiess- und Sprengstoffe" for "Muspratt's Chemie," which appeared under the same title as a separate work in German. A series of four Cantor lectures, delivered before the Royal Society of Arts in 1908, in which he summarised the progress made in the manufacture of explosives during the last twenty years, has been published as a separate book, richly illustrated, both in English and German, and has been selected by the Smithsonian Institution for publication in its "Contributions to Knowledge." He also wrote the articles on "Explosives" for the several editions of the "Chemisch-Technische Untersuchungs-Methoden." Not many months ago he revised and brought up to date the MS. of his article for the sixth edition of that work. About this time Guttmann also published a large number of papers in this Journal, in the Proceedings of the Institution of Civil Engineers, Chemiker-Zeitung, Zeitschrift für angewandte Chemie, Chemische Zeitschrift, and Zeit. f. das gesam. Schiess- u. Sprengstoffwesen. He devoted attention to the construction of safety buildings for Explosives Works, on which he read a paper before this Society last year; a continuation of this paper appeared in the last issue of the Journal. He patented this form of construction but placed no restriction whatever on the free use of his patent.

Guttmann devoted a large amount of such spare time as his practice left him to historical researches in the Explosives Industry. Not only did he collect the most representative documents and works, but he frequently visited home and foreign libraries, in order to examine and study old documents. The fruits of these special researches are embodied in a finely illustrated work, "Monumenta Pulveris Pyrii," which appeared in 1906 printed as an "édition de luxe," for a limited number of subscribers. The idea for the handsome volume published by the Explosives Section of the Seventh International Congress of Applied Chemistry, entitled "The Rise and Progress of the British Explosives Industry," originated with him. He collaborated with all his zeal in the production of this work.

He contributed largely to the Proceedings of this Society, and was no less active at the meetings of the London Section. He threw himself with enthusiasm into the movement to improve the technical education of chemists and chemical engineers. Thus he delivered a series of four lectures on Explosives in the Technical College at Glasgow and later at University College, London, and took a considerable part in promoting the scheme of technical examinations inaugurated by the Institute of Chemistry. He also read a paper on this subject before this Society entitled, "The Works Chemist as Engineer."

He became a naturalised British subject in 1894. He was twice a member of the Council of the Society of Chemical Industry; a vice-president of the Institute of Chemistry, a member of the Institution of Civil Engineers and of many home and foreign scientific and technical societies. His services to technical progress were frequently recognised by foreign societies. On August 2nd, whilst actively engaged as a Juror of the Brussels Exhibition, he met with that accident, in a motor cab collision, which put a sudden end to a life, active, still in its prime, and full of promise.

He was buried on August 9th, in Hampstead Cemetery. His remains were followed by a large concourse of friends, members of the Society of Chemical Industry, the Institute of Chemistry, and the Society of Public Analysts, and by many Freemasons, he having been a prominent member of the Craft.

Journal and Patent Literature.

Patent Specifications may be obtained by post by remitting as follows:—

English.—8*d.* each, to the Comptroller of the Patent Office, W. Temple Franks, Esq., Southampton Buildings, Chancery Lane, London, W.C.

United States.—1*s.* each, to the Secretary of the Society.

French.—1 fr. 25 c. each, to Belin et Cie., 56, Rue des Francs Bourgeois, Paris (3e.).

German.—1 mark each (with full particulars) to Kaiserlich Patentamt, Berlin, Germany.

I.—GENERAL PLANT; MACHINERY.

Coatings and coverings for the prevention of soil and electrolytic corrosion of iron pipe. Harper. *See* X.

Patents.

Furnaces. W. B. Bary, St. Petersburg, Russia. Eng. Pat. 18,452, Aug. 10, 1909.

The claim is for an annular, double-walled, dome-roofed furnace, having the chimney shaft in the space enclosed by the annulus. An annular platform forming the sole is supported by conical rollers on ball bearings and is rotated within the furnace chamber, serving to support the materials to be heated. The furnace is heated by liquid or gaseous fuel, the latter being preheated by being caused to enter the combustion chamber through an annular passage in the furnace wall. The whole is enclosed within an outer wall and roof, spaced away from the furnace proper, to prevent loss of heat by radiation.—W. H. C.

Boiler furnaces. T. F. F. Lee. Fr. Pat. 412,350, Feb. 5, 1910. Under Int. Conv., Feb. 19, 1909.

In order to obtain a large amount of heating surface, three horizontal cylinders forming together one boiler unit are arranged in the form of a triangle leaving a space between the two lower cylinders to act as a combustion chamber. Fuel is supplied to the combustion chamber through inclined curved shoots one on each side of the boiler. These inclined shoots are provided with oscillating bars to assist the feeding of the fuel. A smoke-collecting chamber connected to a stack or chimney is provided at the end of the boiler remote from the furnace door.
—W. H. C.